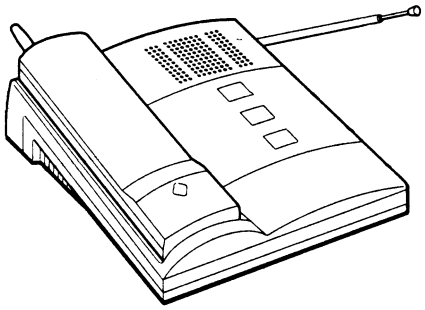
aiwa SERVICE

TN-C315 AEZ



SERVICE MANUAL

CORDLESS TELEPHONE

This Service Manual is the "Revision Publishing" and replaces "Simple Manual" (S/M Code No. 09-99B-335-9T1).

This Service Manual does not include "ADJUSTMENT" These items will be issued in the next Supplement.

aiwa

S/M Code No. 09-99B-335-9R1

REVISION DATA

SPECIFICATIONS

OPERATING FREQUENCIES

	BASE	HANDSET
TRANSMIT FREQUENCY	31MHz	40MHz
RECEIVE FREQUENCY	40MHz	31MHz

GENERAL

Pulse Mode Dialing Rate	10 PPS
Pause Entry Delay	3 Seconds
R (flash)	100 ms
Redial Memory Capacity	32 Digits
Power Requirements	
BASE and CHARGER	230V 8/9V AC
HANDSET	3.6V DC (Nickel-Cadmium Battery)
Weight	
BASE	308 g (11 oz.)
HANDSET (Battery not included)	130 g (4.6 oz.)
Measurements	
BASE	150 (W) × 174 (D) × 51 (H) mm
(Antenna not included)	(6 × 6 7/8 × 2 1/8 in.)
Antenna length	382 mm (15 1/8 in.)
HANDSET	52 (W) × 162 (D) × 31.2 (H) mm
(Antenna not included)	(2 1/8 × 6 1/2 × 1 1/4 in.)
Antenna length	101 mm (4 in.)
Battery Life (HANDSET)	Standby: 10 days Talk: 7 hours
Frequency	31/40 MHz
Modulation	FM
Security Code	65K Random

- Design and specifications are subject to change without notice.

ELECTRICAL MAIN PARTS LIST

DESCRIPTIONで判断できない物は "REFERENCE NAME LIST" を参照してください。
If can't understand for Description please kindly refer to "REFERENCE NAME LIST".

REF. NO	PART NO.	KANRI NO.	DESCRIPTION
IC			
	88-PCD-605-010		IC,TB31224F
	88-PCD-602-010		IC,TMP87C807U
	87-A21-136-040		IC,AT24C01A-10SC 8P
	S9-570-290-000		IC,KIA7029F
	8Z-PC6-603-010		IC,TMP87C408N
	87-A91-033-010		P-COUPLER,LTV817
	8Z-PC6-605-010		IC,TEA1062
	8Z-PC6-604-010		IC,NJM386D
TRANSISTOR			
	SA-039-040-000		C-TR,MMBT3904
	SA-010-372-000		TR,2SA1037AKQ
	SA-038-800-250		TR,KTC3880Y
	S3-146-319-525		TR,KTC3195Y
	SA-039-060-010		TR,SST3906
	8Z-PC6-621-010		TR,KSP92
	8Z-PC6-627-080		C-TR,KST42
	89-324-121-080		C-TR,2SC2412K
	89-327-144-080		TR,2SC2714Y
	87-A30-315-080		TR,HIT5609
DIODE			
	82-135-799-010		DIODE,IN4148
	87-A40-587-080		ZENER,BZX55-C5V1 5.1V
	S0-100-561-230		ZENER,BZX55-C5V6 5.6V
	S0-100-621-210		ZENER,BZX55-C6V2 6.2V
	87-A40-583-080		ZENER,BZX55-C5V6
	87-A40-246-080		DIODE,IN4148 T-72
	87-A40-153-080		ZENER,BZX44/C27
	87-A40-586-080		DIODE,1N4004
	8Z-PC6-640-080		ZENER,Z1200 200V 1W
	87-A40-638-080		ZENER,BZX55-C12
	87-A40-145-080		ZENER,BZX55/C7V5
	87-A40-585-080		ZENER,BZX55-C6V2
MAIN C.B			
BPF301	88-PCD-635-010		FLTR,SFE10.7MS2 -M
BPF302	8Z-PC6-617-010		FLTR,LTW33-450E
BPF303	8Z-PC6-618-010		FLTR,DPX1025 -B/U
C101	87-010-315-080		C-CAP,S 27P-50 CH
C102	87-010-315-080		C-CAP,S 27P-50 CH
C103	87-010-188-080		CAP,CHIP 6800P
C104	87-010-181-080		CAP,CHIP S 1800P
C105	87-010-956-080		CHIP-CAP,S 0.068-25B
C106	87-010-189-080		C-CAP,S 8200P-50 B
C107	87-010-197-080		CAP, CHIP 0.01 DM
C108	87-010-380-040		CAP,E 47-16 SME
C109	87-010-805-080		CAP, S 1-16
C110	87-016-461-080		C-CAP,S 0.47-16F
C111	87-010-178-080		CHIP CAP 1000P
C115	87-010-378-040		CAP,E 10-16
C116	87-010-175-080		CAP 560P
C201	87-A11-064-010		CAP,M/P 0.47-250 K MMCF0250K 4
C202	87-010-198-080		CAP, CHIP 0.022
C203	87-010-976-080		CAP,CER 1000P-500 B
C204	87-010-976-080		CAP,CER 1000P-500 B
C205	87-010-184-080		CHIP CAPACITOR 3300P(K)
C206	87-010-322-080		C-CAP,S 100P-50 CH
C207	87-012-141-080		CHIP-CAPACITOR,0.22-16F
C208	87-010-112-040		CAP,E 100-16
C209	87-010-197-080		CAP, CHIP 0.01 DM
C210	87-010-196-080		CHIP CAPACITOR,0.1-25
C211	87-010-322-080		C-CAP,S 100P-50 CH
C212	87-010-178-080		CHIP CAP 1000P
C213	87-010-196-080		CHIP CAPACITOR,0.1-25
C214	87-010-196-080		CHIP CAPACITOR,0.1-25
C215	87-010-196-080		CHIP CAPACITOR,0.1-25
C216	87-010-198-080		CAP, CHIP 0.022
C217	87-A10-891-080		CAP,E 4.7-25 SME
C218	87-010-197-080		CAP, CHIP 0.01 DM
C219	87-010-196-080		CHIP CAPACITOR,0.1-25
C220	87-010-197-080		CAP, CHIP 0.01 DM
C221	87-010-198-080		CAP, CHIP 0.022
C224	87-010-378-040		CAP,E 10-16
C301	87-A11-713-080		C-CAP,S 0.039-50 Z F
C302	87-010-178-080		CHIP CAP 1000P
C303	87-012-140-080		CAP 470P
C304	87-010-185-080		C-CAP,S 3900P-50 B
C306	87-010-196-080		CHIP CAPACITOR,0.1-25
C307	87-010-315-080		C-CAP,S 27P-50 CH
C308	87-010-196-080		CHIP CAPACITOR,0.1-25
C309	87-010-189-080		C-CAP,S 8200P-50 B
C310	87-010-196-080		CHIP CAPACITOR,0.1-25
C312	87-010-197-080		CAP, CHIP 0.01 DM
C315	87-010-313-080		CAP, CHIP 18P
C316	87-010-319-080		C-CAP,S 56P-50 CH
C317	87-010-147-080		C-CAP,S 3P-50 CH
C318	87-010-197-080		CAP, CHIP 0.01 DM
C319	87-010-197-080		CAP, CHIP 0.01 DM
C322	87-010-154-080		CAP CHIP 10P
C323	87-A11-112-080		CAP,TC U 1000P-50 J CH
C325	87-010-196-080		CHIP CAPACITOR,0.1-25
C326	87-010-196-080		CHIP CAPACITOR,0.1-25
C327	87-010-315-080		C-CAP,S 27P-50 CH
C328	87-010-197-080		CAP, CHIP 0.01 DM
C329	87-016-461-080		C-CAP,S 0.47-16F
C330	87-010-196-080		CHIP CAPACITOR,0.1-25
C331	87-010-197-080		CAP, CHIP 0.01 DM
C332	87-010-320-080		CHIP CAP 68P
C333	87-010-197-080		CAP, CHIP 0.01 DM
C334	87-010-319-080		C-CAP,S 56P-50 CH
C335	87-010-319-080		C-CAP,S 56P-50 CH
C336	87-010-378-040		CAP,E 10-16
C337	87-010-327-080		CAP, CHIP S 4P SL
C338	87-010-178-080		CHIP CAP 1000P
C339	87-010-196-080		CHIP CAPACITOR,0.1-25
C340	87-010-196-080		CHIP CAPACITOR,0.1-25
C341	87-010-196-080		CHIP CAPACITOR,0.1-25
C342	87-010-314-080		C-CAP,S 22P-50V
C344	87-012-156-080		C-CAP,S 220P-50 CH
C345	87-012-156-080		C-CAP,S 220P-50 CH
C346	87-010-186-080		CAP,CHIP 4700P
C348	87-010-196-080		CHIP CAPACITOR,0.1-25
C349	87-010-185-080		C-CAP,S 3900P-50 B
C350	87-010-196-080		CHIP CAPACITOR,0.1-25
C351	87-010-196-080		CHIP CAPACITOR,0.1-25
C352	87-010-181-080		CAP,CHIP S 1800P
C353	87-A11-747-080		C-CAP,S 0.15-25 Z F
C354	87-010-182-080		C-CAP,S 2200P-50 B
C355	87-A11-747-080		C-CAP,S 0.15-25 Z F
C357	87-010-197-080		CAP, CHIP 0.01 DM
C358	87-010-197-080		CAP, CHIP 0.01 DM
C359	87-010-196-080		CHIP CAPACITOR,0.1-25
C360	87-010-178-080		CHIP CAP 1000P
C361	87-010-318-080		C-CAP,S 47P-50 CH
C364	87-010-178-080		CHIP CAP 1000P
C365	87-012-156-080		C-CAP,S 220P-50 CH
C366	87-010-196-080		CHIP CAPACITOR,0.1-25
C367	87-010-194-080		CAP, CHIP 0.047
C370	87-010-378-040		CAP,E 10-16
C372	87-010-402-040		CAP,E 2.2-50 SME
C373	87-010-992-080		C-CAP,S 0.047-25 B
C374	87-010-378-040		CAP,E 10-16
C376	87-010-402-040		CAP,E 2.2-50 SME
C377	87-010-402-040		CAP,E 2.2-50 SME
C379	87-010-197-080		CAP, CHIP 0.01 DM

REF. NO	PART NO.	KANRI NO.	DESCRIPTION
C381	87-010-378-040		CAP,E 10-16
C382	87-010-178-080		CHIP CAP 1000P
C383	87-010-112-040		CAP,E 100-16
C384	87-010-380-040		CAP,E 47-16 SME
C386	87-010-597-080		C-CAP,S 0.056-16V,RK
C390	87-010-312-080		C-CAP,S 15P-50 CH
C391	87-010-312-080		C-CAP,S 15P-50 CH
C501	87-010-976-080		CAP,CER 1000P-500 B
C502	87-010-976-080		CAP,CER 1000P-500 B
C503	87-010-976-080		CAP,CER 1000P-500 B
C504	87-010-976-080		CAP,CER 1000P-500 B
C505	87-010-388-010		CAP, ELECT 1000-25SME
C506	87-010-178-080		CHIP CAP 1000P
C507	87-010-235-040		CAP,E 470-16 M 11L SME
C508	87-010-380-040		CAP,E 47-16 SME
C509	87-010-178-080		CHIP CAP 1000P
C510	87-010-976-080		CAP,CER 1000P-500 B
C512	87-010-976-080		CAP,CER 1000P-500 B
C514	87-010-101-010		CAP,E 220-16 SME
C515	87-010-197-080		CAP, CHIP 0.01 DM
J201	88-PCD-615-010		JACK,MODULAR 2 P E5562-000111
J501	8Z-PC6-611-010		JACK,MODULAR 6 P E5764-0003P3
L101	8Z-PC6-620-080		COIL,100UH K LAL02
L102	8Z-PC6-620-080		COIL,100UH K LAL02
L201	87-005-126-080		COIL,1MH
L202	87-005-126-080		COIL,1MH
L301	87-A50-472-010		COIL,0.72UH K KYN
L302	87-A50-368-010		COIL,0.33UH K KYN
L304	8Z-PC6-626-080		COIL,3.9UH K LAL02
L305	87-A50-474-010		COIL,2.7UH LAL03
L306	87-A50-473-010		COIL,0.82UH K KYN
L307	87-A50-447-010		COIL,37UH K 5M4A756N
L308	88-PCD-656-010		COIL,182 46MHZ
L309	87-005-272-080		COIL,22UH
L310	87-005-230-080		COIL,0.56UH M LAL03
L501	87-005-239-080		COIL,100UH
L502	87-005-239-080		COIL,100UH
L503	87-005-239-080		COIL,100UH
L504	87-005-239-080		COIL,100UH
L505	87-005-239-080		COIL,100UH
L506	87-005-239-080		COIL,100UH
LED101	88-PCD-655-080		LED,SE-3001DT RED
LED102	88-PCD-655-080		LED,SE-3001DT RED
SCR201	87-A91-039-010		VRIS,SAS-391KD07
SCR301	87-A40-226-080		VARI-CAP,SVC251SPA
SFR303	87-A91-035-080		SFR,100K H EVNDXAA03B15
SW101	87-A91-036-010		SW,SL 2-2-2 SKA-22D10-G4-NA
SW102	8Z-PC6-623-010		SW,TACT 1102-4
TC301	87-A91-180-010		TRIMMER,30P CVN6D030A
X101	8Z-PC6-622-010		VIB,6.00MHZ ZTA6.00MT

REF. NO	PART NO.	KANRI NO.	DESCRIPTION
X301	8Z-PC6-615-010		VIB,11.15MHZ HC-49/U

HS-RF C.B

C12	87-010-075-040		CAP,E 10-16V
C15	87-010-380-010		CAP,E 47-16V
C16	87-015-696-080		CAP,E 2.2-50V
C19	87-010-545-010		CAP,E 0.22-50V
C24	87-010-075-040		CAP,E 10-16V
C30	87-015-696-080		CAP,E 2.2-50V
C33	87-010-380-010		CAP,E 47-16V
C65	87-010-400-010		CAP,E 0.47-50V
C85	87-010-380-010		CAP,E 47-16V
C87	87-010-264-040		CAP,E 100-10V
D1	87-A40-226-080		DIODE,SVC251SPA
DX1	S3-001-650-000		DUPLEXER 31/40MHZ
IFT1	S0-002-860-070		IFT,KL286N
IFT2	S0-075-600-070		IFT,7MM 455KHZ
IFT3	S0-002-760-070		IFT,KL276N
IFT4	S0-002-741-070		IFT,KL274N
IFT5	S0-002-770-070		IFT,KL277N
J1	S0-200-2P1-500		HEADER KINDTECH 15P
L1	87-003-106-010		INDUCTOR,0.33UH
L2	87-005-166-010		INDUCTOR,1.2UH
L3	87-005-674-080		INDUCTOR,1.5UH
L4	S0-100-152-010		INDUCTOR,10UH
L5	87-003-133-010		INDUCTOR,0.22UH
T1	S0-004-500-180		CER,FILTER LTW33-450E
VR1	S1-030-850-000		SFR,10K
VR3	S1-030-850-000		SFR,10K
X1	S6-111-501-000		X'TAL,11.15MHZ
X2	S0-001-070-010		CER,FILTER 10.7MHz
X3	S3-327-681-000		X'TAL,32.768KHZ
X4	S0-006-000-010		CER,FILTER 6.00MHz

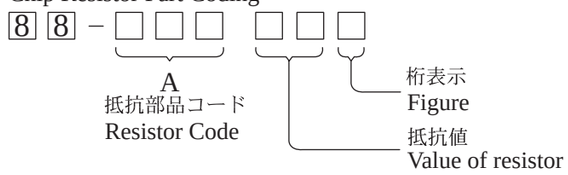
HAND KEY C.B

B1	SB-2BE-HA0-200		HEADER JST 2PIN
L1	87-003-150-080		INDUCTOR 68UH
L2	87-003-150-080		INDUCTOR 68UH
LED1	S0-321-610-010		C-LED,3.2-1.6(RED)
LED2	S0-321-610-010		C-LED,3.2-1.6(RED)
LED3	S0-049-410-030		LED,3MM(GRN)
LED4	S0-049-410-030		LED,3MM(GRN)
LED5	S0-049-410-030		LED,3MM(GRN)
LED6	S0-049-410-030		LED,3MM(GRN)

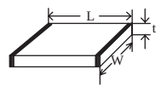
- Regarding connectors, they are not stocked as they are not the initial order items.
  The connectors are available after they are supplied from connector manufacturers upon the order is received.

○チップ抵抗部品コード／CHIP RESISTOR PART CODE

チップ抵抗部品コードの成り立ち
Chip Resistor Part Coding



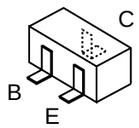
チップ抵抗
Chip resistor

容量 Wattage	種類 Type	許容誤差 Tolerance	記号 Symbol	寸法／Dimensions (mm) 外形／Form	L	W	t	抵抗コード ：A Resistor Code ：A
1/16W	1005	± 5%	CJ		1.0	0.5	0.35	104
1/16W	1608	± 5%	CJ		1.6	0.8	0.45	108
1/10W	2125	± 5%	CJ		2	1.25	0.45	118
1/8W	3216	± 5%	CJ		3.2	1.6	0.55	128

TRANSISTOR ILLUSTRATION

2SC2714
KTC3195
HIT5609

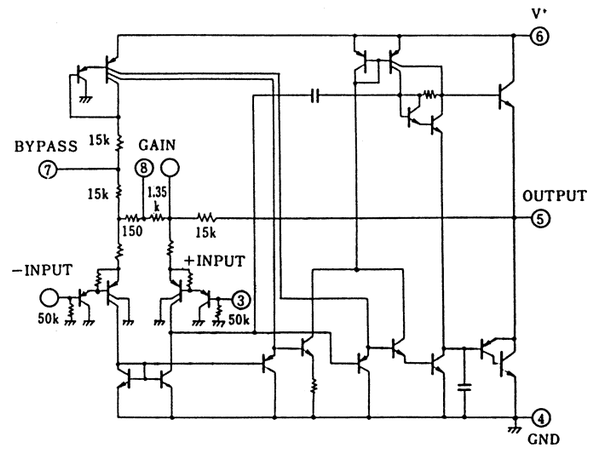
KSP92



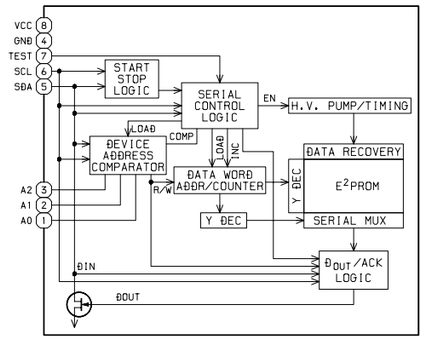
2SA1037
KTC3880
MMBT3904
SST3906
2SC2412
KST42

IC BLOCK DIAGRAM

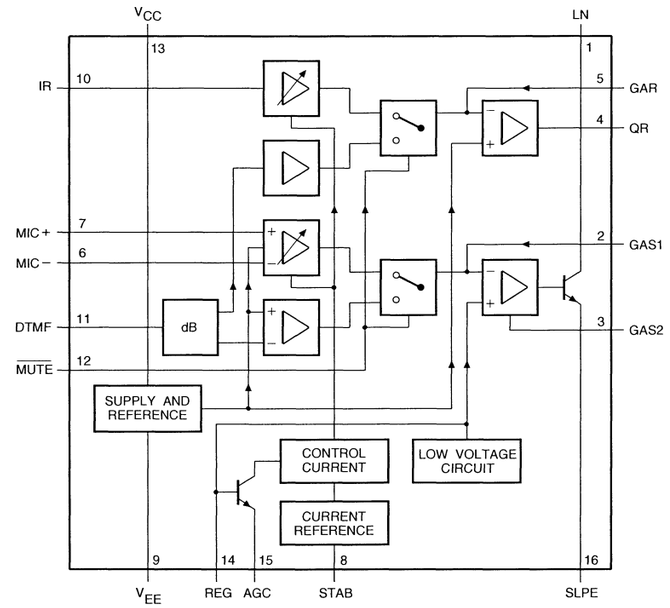
IC, NJM386D



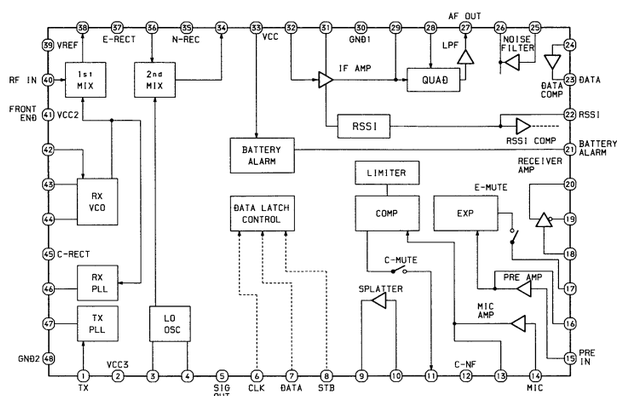
IC, AT24C01A-10SC



IC, TEA1062



IC, TB31224F



MAIN C.B

SW101
TONE↔ PULSE

SP301
(BASE UNIT)
(RECIVER)

J201
TEL.LINE

L501
AC9V/8V

LED101
IN USE/
CHARGE

LED102
POWER

TO/FROM HAND KEY C.B

CHG−

CHG+

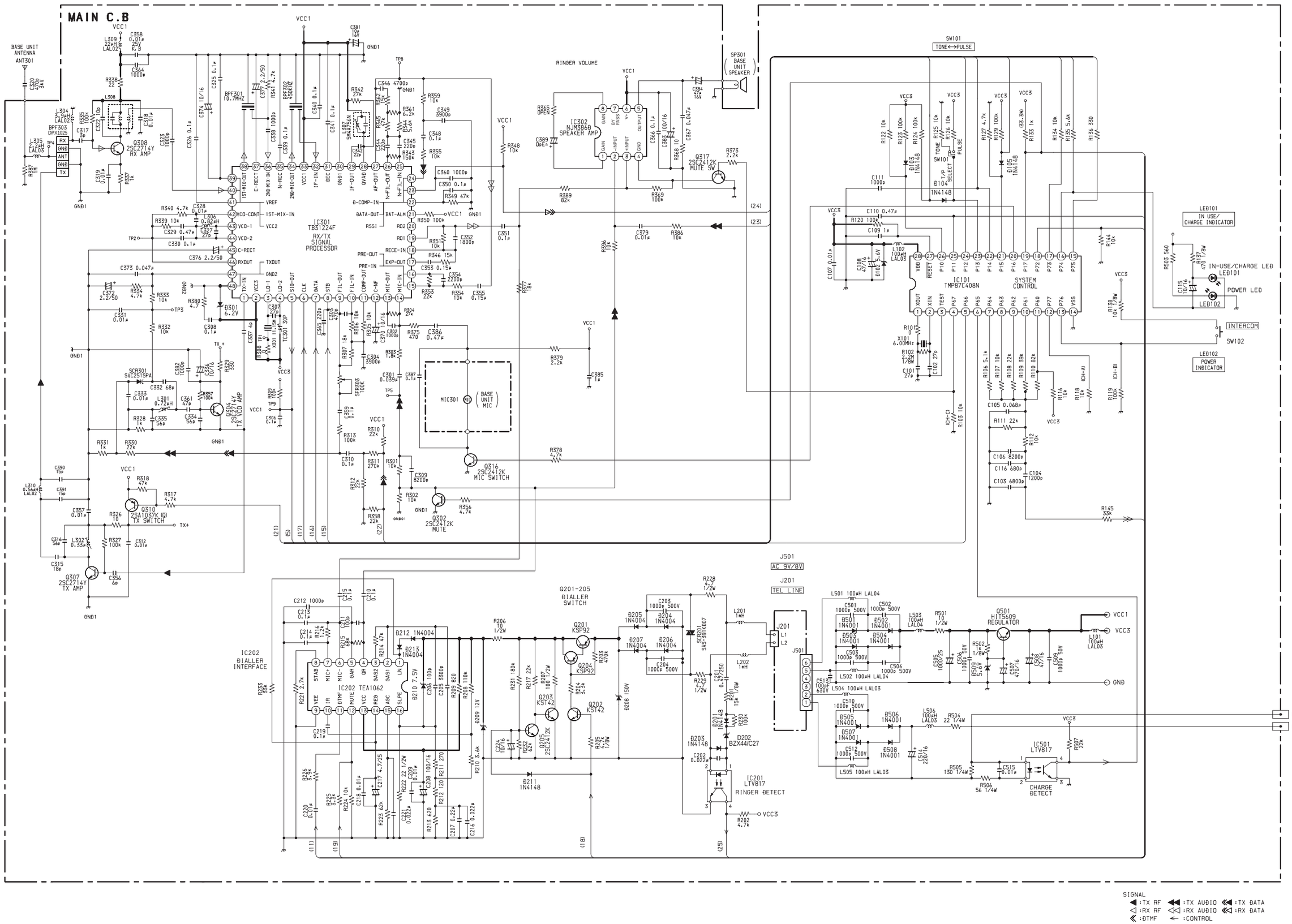
SW102
INTERCOM

MIC301
(BASE UNIT)
(MICROPHONE)

BASE UNIT ANTENNA

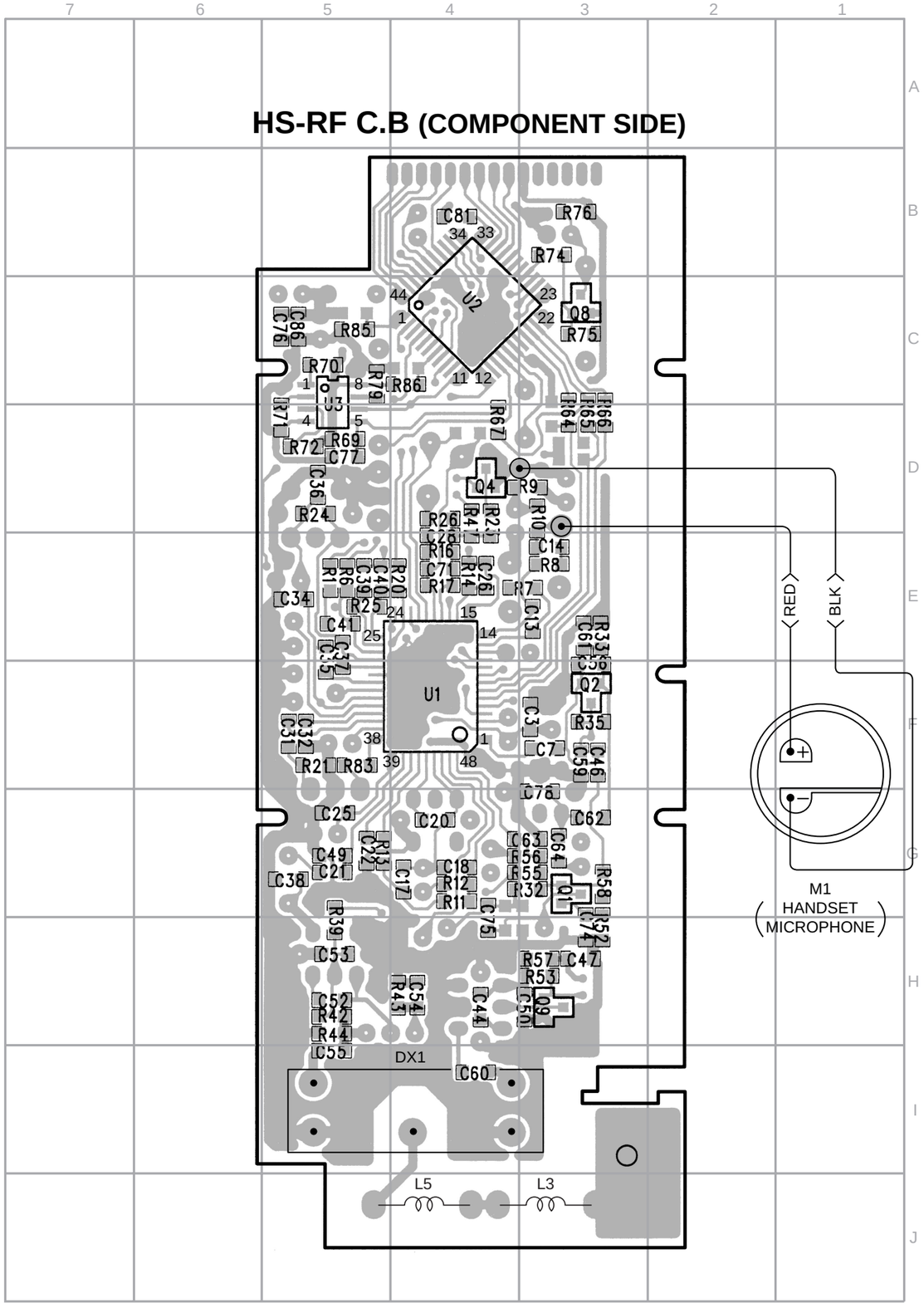
ANT301

SCHEMATIC DIAGRAM-1 (MAIN)



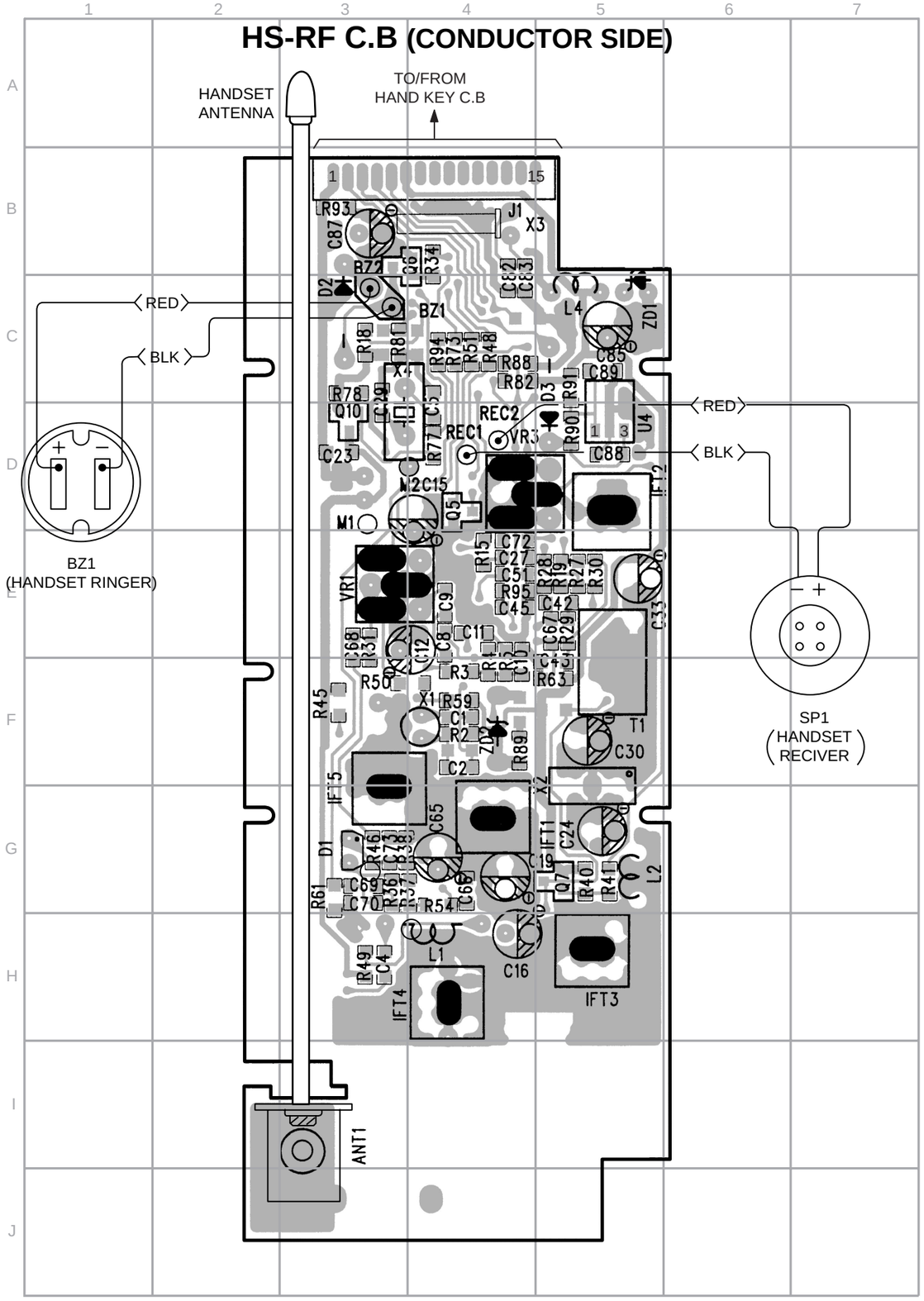
WIRING-2 (HS-RF: COMPONENT)

HS-RF C.B (COMPONENT SIDE)

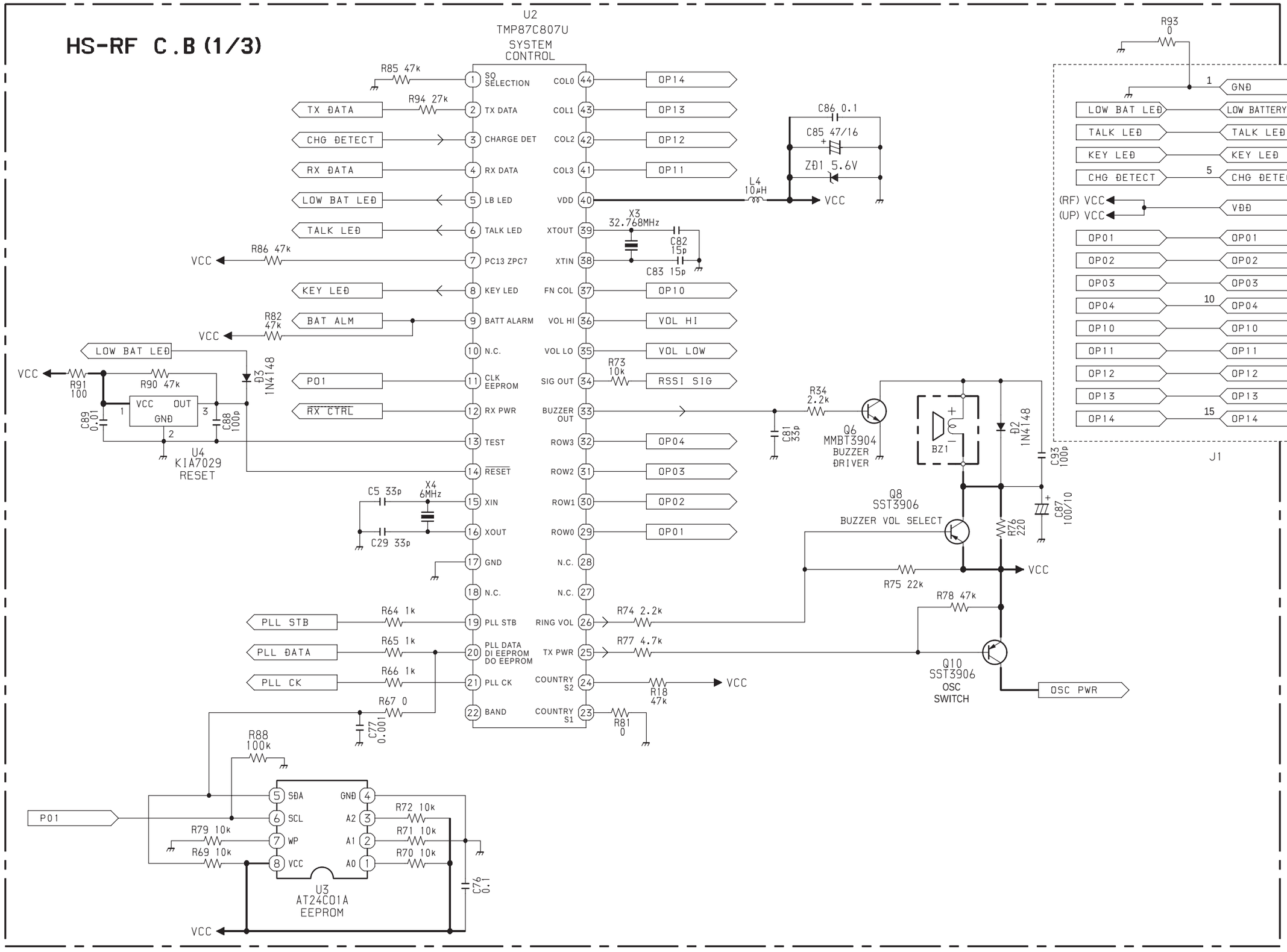


WIRING-3 (HS-RF: CONDUCTOR)

HS-RF C.B (CONDUCTOR SIDE)

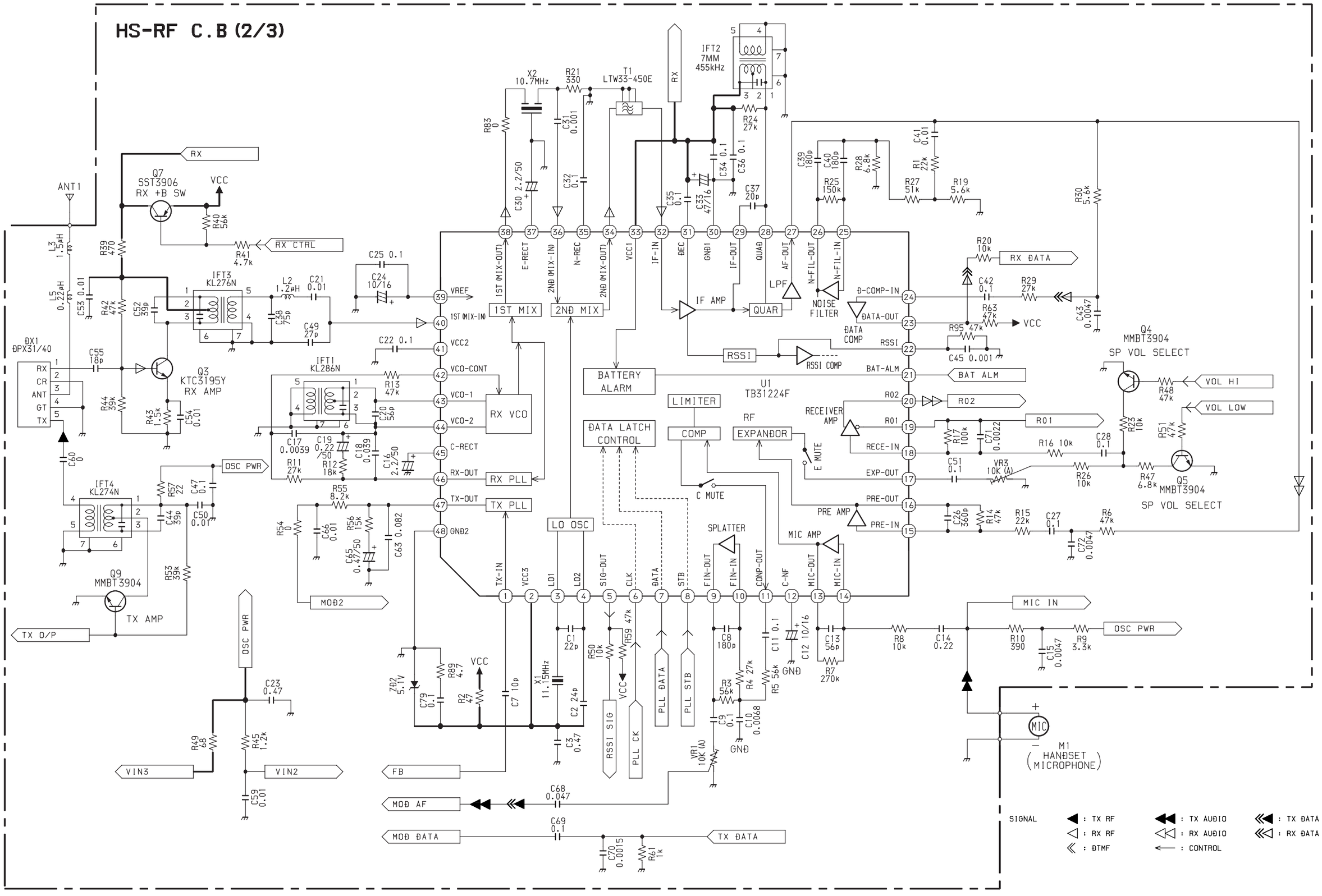


SCHEMATIC DIAGRAM-2 (HS-RF 1/3)

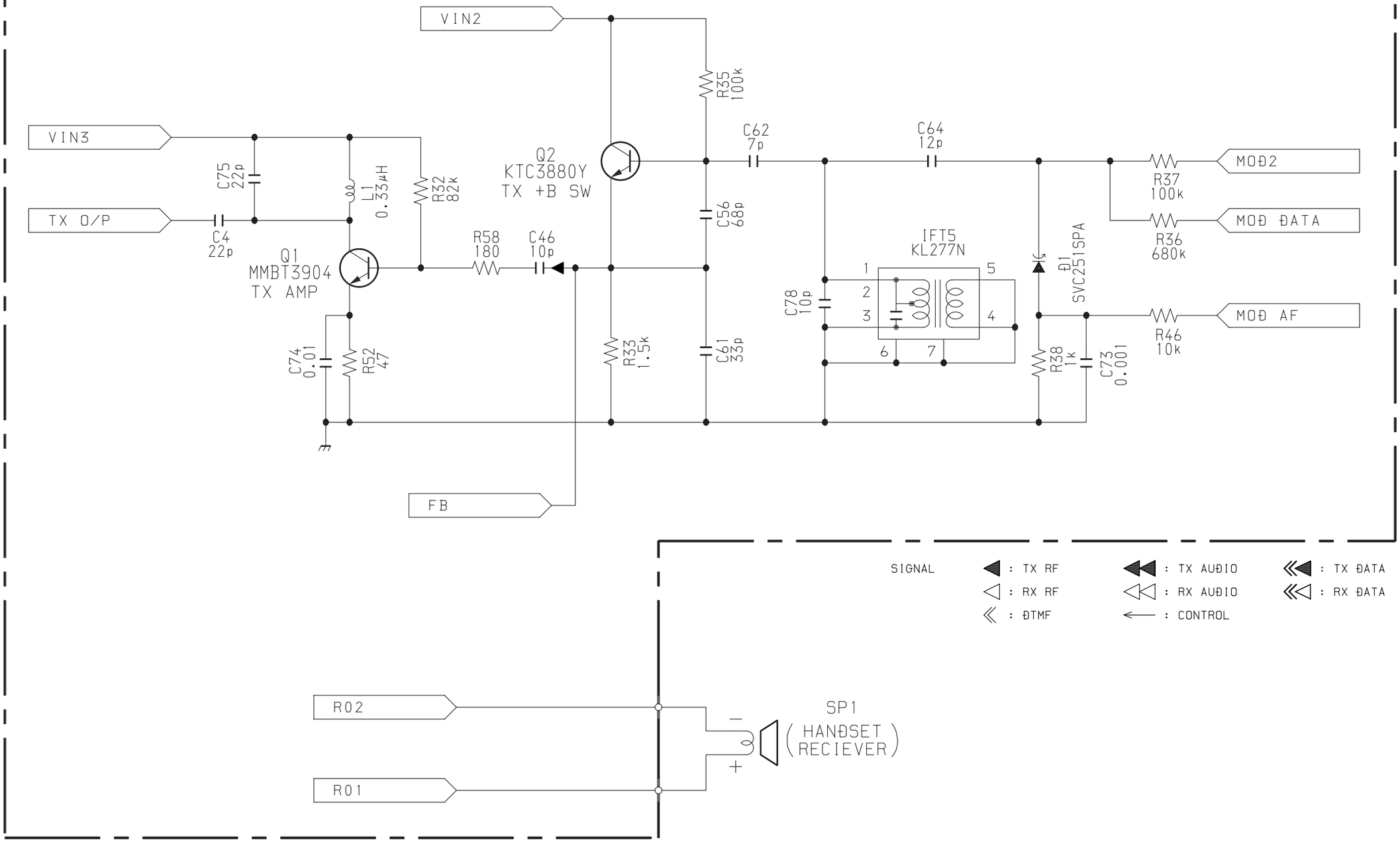


SIGNAL
: TX RF
: RX RF
: DTMF
: TX AUDIO
: RX AUDIO
: CONTROL
: TX DATA
: RX DATA

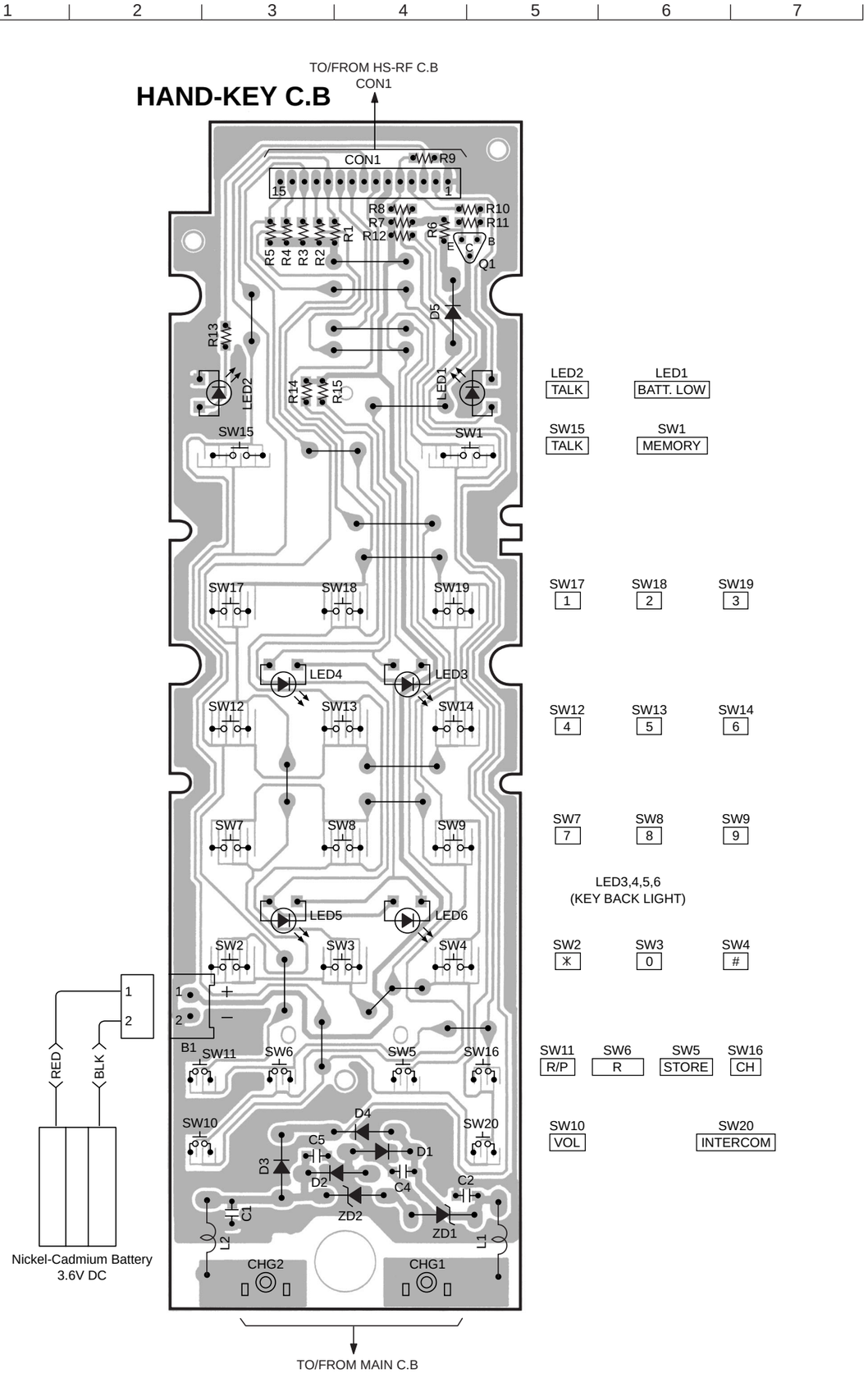
SCHEMATIC DIAGRAM-3 (HS-RF 2/3)



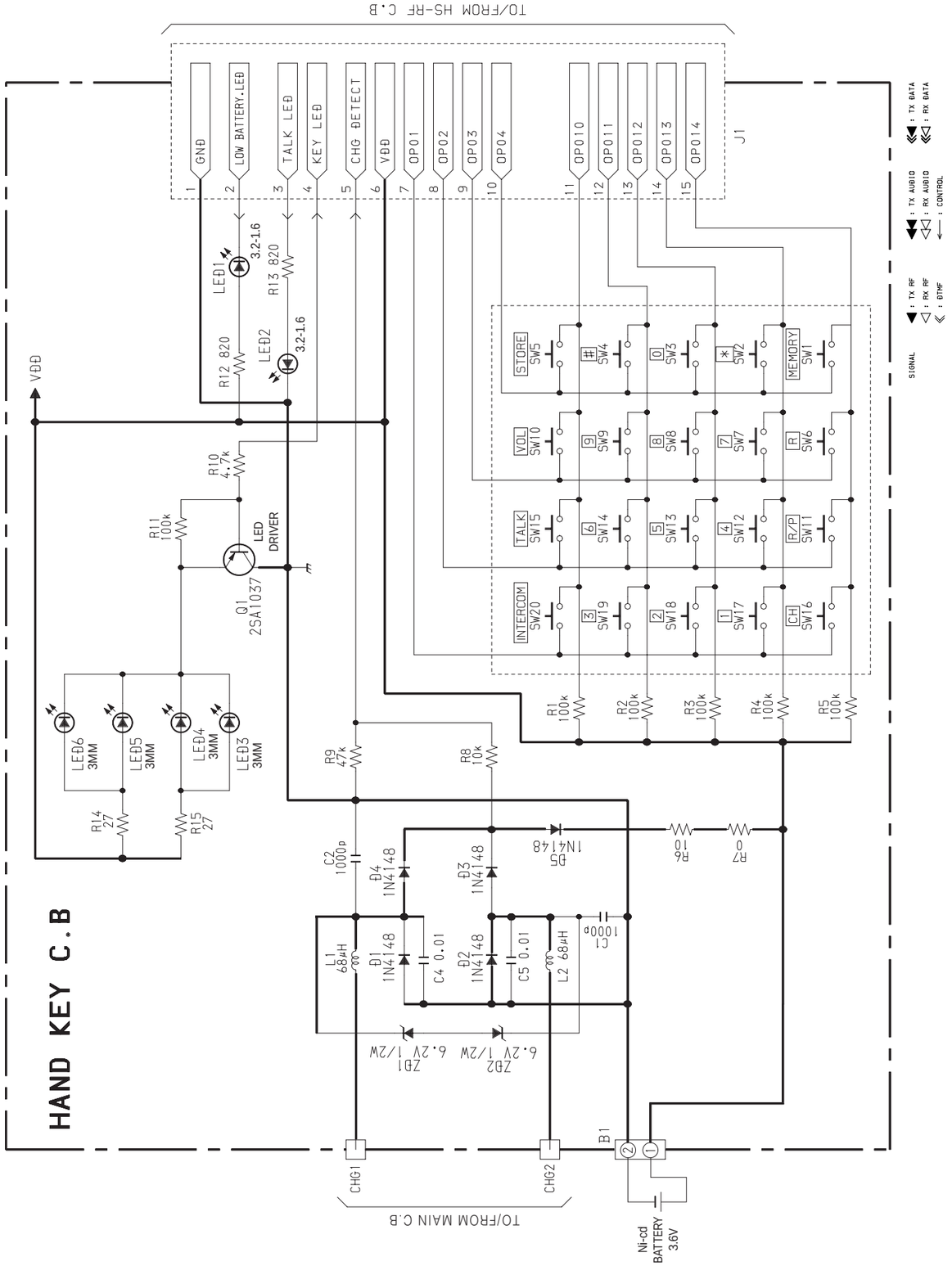
HS-RF C.B (3/3)


VIN2
R35 100k
VIN3
C75 22p
L1 0.33μH
R32 82k
Q2 KTC3880Y TX +B SW
C62 7p
C64 12p
R37 100k
MOÐ2
TX O/P
C4 22p
R36 680k
MOÐ ÐATA
R58 180
C46 10p
C56 68p
IFT5 KL277N
Q1 MMBT3904 TX AMP
C78 10p
D1 SVC251SPA
MOÐ AF
R46 10k
C74 0.01
R52 47
R33 1.5k
C61 33p
R38 1k
C73 0.001
FB
SIGNAL
: TX RF
: TX AUÐIO
: TX ÐATA
: RX RF
: RX AUÐIO
: RX ÐATA
: ÐTMF
: CONTROL
R02
SP1
HANÐSET RECIEVER
R01

WIRING-4 (HAND KEY)



SCHEMATIC DIAGRAM-5 (HAND KEY)



IC DESCRIPTION

IC, TMP87C408N

Pin No.	Pin Name	I/O	Description
1	XOUT	O	Oscillator out
2	XIN	I	Oscillator in
3	TEST	I	Tied low
4	HOOK CONT SPK MUTE	O	Hook control output (for corded phone): 0 = OFF HOOK, 1 = ON HOOK For ZPC-6: this pin is used as Speaker Amp, IC Mute Control) (the Mic Mute control is controlled by hardware: unmute mic when Speaker is unmute and charge not detected)
5	SIG OUT	I	Received Signal Strength Indicator: (TB31224F SIG OUT pin) 0 = carrier present, 1 = carrier absent NOISE DETECT 0 = Rx unlock, 1 = Rx lock Rx LOCK DETECT 0 = Tx unlock, 1 = Tx lock Tx LOCK DETECT
6	CHAG DET CLK EEPROM	I/O	Charge detect: 0 = charging, 1 = not charging. Clock of EEPROM
7	DTMF4	O	DTMF data pin 4 (Most Significant Bit)
8-10	DTMF3-DTMF1	O	DTMF data pin 3-1
11	DTMF0 COUNTRY S2	I/O	DTMF data pin 0 (Least Significant Bit) Country option select 2.
12	RING OFF COUNTRY S1	I/O	Control the shunt resistor: 1 = shunt a resistor (For U, K ONLY) Country option select 1
13	PAGE KEY	I	PAGE key: 1 = PAGE ON, 0 = STANDBY
14	GND	—	Ground
15	PLL STB	O	Combo chip strobe signal (TB31224F)
16	PLL DATA U LED	O	Combo chip data signal (TB31224F). In-use LED: 1 = ON, 0 = OFF.
17	PLL CK DO EEPROM DI EEPROM	I/O	Combo chip clk signal (TB31224F). Data Input/Output of EEPROM.
18	TL RELAY	O	Line seize: 1 = line seize, 0 = off-hook
19	TL MUTE M B SEL	I/O	Telephone Line Mute Control: 1 = MUTE. Make/Break Ratio Select 1 = 33.3%, 0 = 40%
20	HOOK DET	I	Hook detect input (for Corded Phone). 1 = ON HOOK, 0 = OFF HOOK REMARK: this pin is always PULL-HIGH for ZPC-7 or ZPC-6 (I. e. just imagine Corded phone is Always ON HOOK)
21	TX PWR SCRET OPT	I/O	Tx power control: 0 = ON, 1 = OFF. Secret function option: 1 = YES, 0 = NO REMARK: this PULL LOW for ZPC-7 or ZPC-6 (I. e. Secret opt is DISABLED)
22	TX DATA	O	Transmit data output
23	BUZZER T P SEL	I/O	Buzzer signal (key tone and paging sound ONLY) Tone/Pulse selection: 1 = Pulse, 0 = Tone
24	RX DATA	I	Received data input
25	RING DET	I	Ring detect input: 1 = OFF, 0 = RING COME (MC34012)
26	BAND SQ SELECTION	I/O	Shunt capacitor for U.S. Frequency Higher Band: 1 = shunt Cap, OUT OF RANGE FUNCTION: 1 = YES, 0 = NO
27	$\overline{\text{RESET}}$	I	Normally High, Low to reset MCU
28	POWER	—	Power (VCC)

IC, TB31224F

Pin No.	Pin Name	I/O	Description
1	TX-IN	I	Input terminal of TX VCO oscillation signal.
2	VCC3	—	Power supply terminal.
3, 4	LO-1, LO-2	O	LOCAL OSCILLATOR input and output terminals. Colpitts oscillator is formed by internal emitter follower and external X'tal. And external injection is possible from pin 3.
5	SIG OUT	O	Output terminal of detection signal. It is the open drain output.
6	CLK	I	Input terminal of clock. / Input the serial data for controlling IC.
7	DATA	I	Input terminal of serial data.
8	STB	I	Input terminal of strobe signal.
9	FIL-OUT	O	Output of FILTER AMP.
10	FIL-IN	I	Input of FILTER AMP.
11	COMP-OUT	O	Output of COMPRESSOR.
12	C-NF	—	Feedback circuit of T type is formed by external capacitor with SUM AMP.
13	MIC-OUT	O	Output of MIC AMP and connected directly to input of SUM AMP.
14	MIC-IN	I	Input terminal of MIC AMP.
15	PRE-IN	I	Inverted input of PRE AMP.
16	PRE-OUT	O	Output of PRE AMP. Connected directly to EXPANDER.
17	EXP-OUT	O	Output of SUM AMP at EXPANDER. The signal from gain cell is gained by inverted amp.
18	RECE-IN	I	Inverted input of RECEIVER AMP.
19	RO1	O	Receiving output for a dynamic receiver.
20	RO2	O	Used for BTL output type with RO1 terminal when a ceramic receiver is used.
21	BAT-ALM	O	BATTERY ALARM terminals. When VCC decrease VBAT-L, This terminal outputs "H" level. Detection voltage is controlled by data bit. This terminal is open collector output.
22	RSS1	O	This terminal outputs DC level according to input signal level to IF AMP. Dynamic range is around 70dB.
23	DATA-OUT	O	Output terminal for wave form shaping. This terminal is open collector output.
24	D-COMP-IN	I	DATA COMPARATOR input terminal. This terminal input demodulation signal of DATA.
25	N FIL-IN	I	NOISE FILTER input and output terminals. BPF is composed of external capacitors and resistors. Connected internally to rectifier circuit by coupling capacitor.
26	N FIL-OUT	O	
27	AF-OUT	O	Demodulated signal output terminal. Carrier leak is small as LPF is built-in. Output impedance is around 360Ω.
28	QUAD	I	Phase shift signal input terminal of FM demodulator.
29	IF-OUT	O	Output terminal of IF AMP.
30	GND1	—	GND terminal.
31	DEC	I	2nd IF input and decoupling for bias. Input impedance is around 1.5kΩ.
32	IF-IN	I	
33	VCC1	—	Power supply terminal.
34	2ND MIX-OUT	O	MIX output terminal. Output impedance is around 1.5kΩ.

Pin No.	Pin Name	I/O	Description
35	N-REC	O	After output of NOISE FILTER amplified around 20dB, noise signal is rectified by external capacitor.
36	2ND MIX-IN	I	1st IF signal input terminal. Input impedance is around 4.7kΩ at 10.695MHz.
37	E-RECT	O	Connected capacitor for full-wave rectifier circuit of EXPANDER.
38	1ST MIX-OUT	O	MIX output terminals. Externally connects filters. Output impedance is 330Ω. (Typ.)
39	VREF	—	Reference terminal through internal buffer of compander block.
40	1ST MIX-IN	I	MIX input terminal. Double-balance MIX.
41	VCC2	—	Regulator terminal. Output voltage is 2.0V.
42	VCO-CONT	I	Voltage control terminal of RX-VCO.
43, 44	VCO-1, VCO-2	I	They are resonance terminals of RX-VCO.
45	C-RECT	—	Terminal for rectifier of COMPRESSOR. Almost the same circuit as E-RECT terminal.
46	RX-OUT	O	Output terminal of CHARGE PUMP. CHARGE PUMP is constant current output circuit, and output current is varied by input serial data.
47	TX-OUT	O	
48	GND2	—	GND terminal.

1. General description
   TB31224F is controlled by serial parts pin 6, 7, 8, and makes all situations by these serial bits for RF part in 46/49MHz cordless telephone such as intermittent receiving state.
   Not only 46/49MHz cordless telephone but CT0 cordless phone that has frequency spec. between about 20MHz and 60MHz can be also set up TB31224F.

IC, TMP87C807U

Pin No.	Pin Name	I/O	Description
1	SQ SELECTION	I	OUT OF RANGE FUNCTION: 1 = YES, 0 = NO
2	TX DATA	O	Transmitted data
3	CHARGE DET	I	Charge detect: 1 = charging, 0 = not charging
4	RX DATA	I	Received data (INT3/TC3)
5	LB LED	O	Low battery led (High current port): 1 = ON
6	TALK LED	O	Talk led (High current port): 0 = ON
7	PC13 ZPC7	I	Power save mode. Hi: NO, Lo = YES
8	KEY LED	O	Keypad LED: 0 = ON
9	BATT ALARM	I	Battery low detect: 0 = battery ok, 1 = battery low (3.25 V). (Use COMBO chip TB31224F battery detect function)
10	N.C.	—	Not connected.
11	CLK EEPROM	O	Clock of EEPROM
12	RX PWR	O	Rx power control : 0 = ON, 1 = OFF.
13	TEST	—	Tied to low
14	$\overline{\text{RESET}}$	I	Normally High, low to reset MCU.
15	XIN	I	Resonator in (3.58 MHz)
16	XOUT	O	Resonator out (3.58 MHz)
17	GND	—	Ground
18	N.C.	—	Not connected.
19	PLL STB	O	Combo chip strobe signal input.
20	PLL DATA DI EEPROM DO EEPROM	I/O	Combo chip data signal input. Data input of EEPROM. Data output of EEPROM.
21	PLL CK	O	Combo chip clock signal output.
22	BAND	O	Shunt capacitor for U.S. frequency high band: 1 = shunt capacitor.
23, 24	COUNTRY S1, S2	I	Country channel table selection 1, 2.
25	TX PWR	O	TX power control : 0 = ON, 1 = OFF.
26	RING VOL	O	Ringer volume control
27, 28	N.C.	—	Not connected.
29-32	ROW0-ROW3	O	Keypad column output #0-#3
33	BUZZER OUT	O	Buzzer signal
34	SIG OUT	I	Received signal strength indicator: (TB31224F SIG OUT Pin) 0 = carrier present, 1 = carrier absent 0 = Rx unlock, 1 = Rx lock 0 = Tx unlock, 1 = Tx lock
35	VOL LO	O	Receiver volume control 1 (Lo)
36	VOL HI	O	Receiver volume control 2 (Hi)
37	FN COL	I	Function key column input (INT5)
38	XTIN	I	32.768 kHz crystal
39	XTOUT	O	32.768 kHz crystal
40	VDD	—	Power (VCC)
41-44	COL3-COL0	I	Keypad column input #0-#3

VOLTAGE CHART

< B/U-MAIN >

IC302 (SPEAKER-AMP)

	WAITING (V)	TALIKING (V)	CHARGING (V)
1	3.5	3.5	3.5
2	3.1	3.1	3.1
3	3.7	3.7	3.7
4	3.7	4	3.7
5	4.2	4.2	4.2
6	5	5	5
7	3.7	3.7	3.7
8	3.5	3.5	3.5

IC202 (SPEACH)

	WAITING (V)	TALIKING (V)	CHARGING (V)
1	0	3.7	0
2	0-0.1	2	0-0.1
3	0-0.1	2	0-0.1
4	0.3	2.2	0.2
5	0.2	2.2	0.2
6	0.2	2.2	0.2
7	0.2	2.2	0.2
8	0	0.1	0
9	0	0	0
10	0.2	1.2	0.2
11	0.1	2.2	0.1
12	0.2	0.2	0.2
13	0	4.4	0
14	0	2	0
15	0	0.8	0
16	0	0.8	0

IC301 (RF)

	WAITING (V)	TALIKING (V)	CHARGING (V)
1	5	5	5
2	5	5	5
3	4.9	4.9	4.9
4	4.6	4.6	4.6
5	4.9	0.02	4.9
6	0.02	0	0.03
7	4.8	0.4	0.4
8	0	0	0
9	0.7	1.4	0.7
10	0.7	1.4	0.7
11	0.7	1.4	0.7
12	0.8	1.4	0.8
13	0.8	1.4	0.8
14	0.8	1.4	0.8
15	1.5	1.4	1.4
16	1.5	1.4	1.4
17	1.5	1.4	1.4
18	1.2	1.2	1.2
19	1.2	1.2	1.2
20	1.2	1.2	1.2
21	0.01	0	0.01
22	0.4	1.1	0.4
23	2.4	2.5	2.5
24	0.7	0.7	0.7
25	0.6	0.6	0.6
26	0.7	1.5	0.7
27	1-1.2	1.1	1
28	5	5	5
29	4.1	4.1	4.1
30	0	0	0
31	4.6	4.6	4.6
32	4.6	4.6	4.6
33	5	5	5
34	3.6	3.7	3.6
35	1.2	0.06	1.2
36	1	1	1

	WAITING (V)	TALIKING (V)	CHARGING (V)
37	1.3	0.7	1.3
38	3.5	3.7	3.5
39	1.5	1.5	1.5
40	1	1	1
41	2.1	2.1	2.1
42	2.1	2.1	2
43	5	5	5
44	5	5	5
45	0.3	0.7	0.3
46	2	2.1	2.1
47	1.3	3.7	2
48	0	0	0

IC201 (MCU)

	WAITING (V)	TALIKING (V)	CHARGING (V)
1	2.1	2.1	2.1
2	2	2	2
3	0	0	0
4	0	0	0
5	4.9	0.02	4.9
6	4.9	4.9	0.03
7	0	0	0
8	0	0	0
9	0	0	0
10	0	0	0
11	0.03	0.03	0.03
12	0	0	0
13	0	0	0
14	0	0	0
15	0	0	0
16	4.8	0.4	0.4
17	0.03	0	0.03
18	0	4.6	0
19	0.3	0.3	0.3
20	0.01	0.01	0.01
21	4.7	0.06	4.7
22	2.4	2.4	2.4
23	5	5	5
24	2.5	2.5	2.4
25	5	5	5
26	0-0.04	0.05	0-0.4
27	4.8	4.8	4.8
28	4.8	4.8	4.8

Q201

	WAITING (V)	TALIKING (V)	CHARGING (V)
E	49.4	6.4	49.2
C	0	5.6	0
B	47.3	56	47.1

Q202

	WAITING (V)	TALIKING (V)	CHARGING (V)
E	0	0	0
C	29.8	0.01	30.1
B	0	0.7	0

Q203

	WAITING (V)	TALIKING (V)	CHARGING (V)
E	0	0	0
C	0	5.6	0
B	0	0.5	0

Q204

	WAITING (V)	TALIKING (V)	CHARGING (V)
E	47.4	5.6	47.2
C	0	5.6	0
B	30.1	4.9	29.1

Q205

	WAITING (V)	TALIKING (V)	CHARGING (V)
E	0	0	0
C	0	0.5	0
B	0	0.6	0

Q316

	WAITING (V)	TALIKING (V)	CHARGING (V)
E	0	0	0
C	0.1	0.1	0.2
B	0.01	0.01	0.01

Q302

	WAITING (V)	TALIKING (V)	CHARGING (V)
E	0	0	0
C	1.5	1.5	1.5
B	0.3	0.3	0.3

Q304

	WAITING (V)	TALIKING (V)	CHARGING (V)
E	0	2.1	0
C	0.2	4.3	0.2
B	0.2	2.6	0.2

Q310

	WAITING (V)	TALIKING (V)	CHARGING (V)
E	5	5	5
C	0.3	4.9	0.3
B	4.9	4.3	4.9

Q307

	WAITING (V)	TALIKING (V)	CHARGING (V)
E	0	0	0
C	0.2	4.9	0.2
B	0.2	0.6	0.2

Q308

	WAITING (V)	TALIKING (V)	CHARGING (V)
E	2.3	2.3	2.3
C	4.9	4.9	4.9
B	2.7	2.6	2.7

Q317

	WAITING (V)	TALIKING (V)	CHARGING (V)
E	0	0	0
C	3.7	4	3.7
B	0	0	0

Q501

	WAITING (V)	TALIKING (V)	CHARGING (V)
E	5	5	5
C	10.8	10.3	10.2
B	5.6	5.6	5.6

< H/S-RF >

IC-U4 (RESET)

	WAITING (V)	TALIKING (V)	CHARGING (V)
1	3.8	3.8	3.8
2	0	0	0
3	3.8	3.8	3.8

IC-U3 (EEPROM)

	WAITING (V)	TALIKING (V)	CHARGING (V)
1	3.8	3.8	3.8
2	0	0	0
3	3.8	3.8	3.8
4	0	0	0
5	3.8	3.8	3.8
6	0	0	0
7	0	0	0
8	3.8	3.8	3.8

IC-U2 (MCU)

	WAITING (V)	TALIKING (V)	CHARGING (V)
1	0	0	0
2	0	0	0
3	0	0	4.4
4	3.8	0-2.8	1.8
5	3.8	3.8	4.1
6	0	3.5	0
7	3.8	3.8	4.1
8	3.8	3.8	4.1
9	3.8	0.02	0.02
10	1.8	1.5	0
11	0	0	0
12	3.8	0.02	0.02
13	0	0	0
14	3.8	3.8	4.1
15	0-3	1.2	1.4
16	3.8	1.5	1.6
17	0	0	0
18	1.5	1.4	0-0.01
19	0	0	0
20	3.8	3.8	4.1
21	0	0	0
22	0	0	0-2.1
23	0	0	0.04
24	3.8	3.8	4.1

	WAITING (V)	TALIKING (V)	CHARGING (V)
25	3.8	0.04	4.1
26	3.8	3.8	4.1
27	1.5	1.5	0-0.01
28	1.5	1.5	0-0.01
29	0	0	0
30	0	0	0
31	0	0	0
32	0	0	0
33	0	0	0
34	3.8	3.8	4.1
35	0	3.8	0
36	3.8	0	4.1
37	3.8	3.8	4.1
38	1.3	1.3	1.5
39	2	2	2.2
40	3.8	3.8	4.1
41	3.8	3.8	4.1
42	3.8	3.8	4.1
43	3.8	3.8	4.1
44	3.8	3.8	4.1

IC-U1 (RF)

	WAITING (V)	TALIKING (V)	CHARGING (V)
1	3.8	3.7	3.9
2	3.8	3.7	3.9
3	0-1.4	3.7	3.9
4	0-1.4	3.3	3.5
5	3.8	0.03	4
6	0	0	0.04
7	3.8	3.8	4
8	0	0	0
9	0.1	1.4	0.1
10	0.1	1.4	0.1
11	0.3	1.4	0.3
12	0.3	1.4	0.3
13	0.3	1.4	0.3
14	0.3	1.4	0.3
15	0-0.2	1.4	0.01-0.2
16	0-0.2	1.4	0.01-0.2
17	0.1	1.4	0.1
18	0.01-0.1	1.2	0.1
19	0.01-0.1	1.2	0.1
20	0.01-0.1	1.2	0.1
21	0-3.8	0	0.02
22	0	1	0.2
23	0-3.8	0.01-1.8	1.8
24	0-0.06	0.7	0.7
25	0	0.7	0.7
26	0	0.7	0.7
27	0.01-0.8	0.7	1
28	0.1-1.1	3.8	4
29	0.1-1	2.8	3.1
30	0	0	0
31	0.1-1.2	3.4	3.6
32	0.1-1.2	3.4	3.6

	WAITING (V)	TALIKING (V)	CHARGING (V)
33	0.1-1.2	3.8	4
34	0.1-0.9	2.4	2.7
35	0	0.05	1.3
36	0.01-0.4	1	1
37	0.3	0.7	0.3
38	0.1-0.8	2.3	2.6
39	0.3	1.4	0.3
40	0-0.1	1	1
41	0.3-1.8	2	2
42	0-0.6	0.02	0-0.6
43	0.1-1.1	3.8	4
44	0-0.1	3.8	4
45	0.3	0.6	0.3
46	0-0.8	1.1	2.3
47	0.07	2.2	0.2
48	0	0	0

Q3

	WAITING (V)	TALIKING (V)	CHARGING (V)
E	0-0.2	0.8	0.8
C	0.1-1.2	3.5	3.5
B	0.5-1.5	1.5	1.5

Q7

	WAITING (V)	TALIKING (V)	CHARGING (V)
E	3.8	3.8	3.9
C	0.1-1.8	3.7	3.8
B	3.8	3.1	3.2

Q5

	WAITING (V)	TALIKING (V)	CHARGING (V)
E	0	0	0
C	0.02	0.02	0.02
B	0	0.5	0

Q6

	WAITING (V)	TALIKING (V)	CHARGING (V)
E	0	0	0
C	3.8	3.8	3.9
B	0	0	0

Q10

	WAITING (V)	TALIKING (V)	CHARGING (V)
E	3.8	3.8	3.9
C	0.2	3.7	0.1
B	3.8	3.1	3.9

Q8

	WAITING (V)	TALIKING (V)	CHARGING (V)
E	3.8	3.8	3.9
C	3.8	3.8	3.9
B	3.8	3.8	3.9

Q4

	WAITING (V)	TALIKING (V)	CHARGING (V)
E	0	0	0
C	0.04	0.04	0.04
B	0.6	0	0.6

Q2

	WAITING (V)	TALIKING (V)	CHARGING (V)
E	0	1.3	0
C	0.2	2.6	0.1
B	0.2	2	0.1

Q1

	WAITING (V)	TALIKING (V)	CHARGING (V)
E	0	0.2	0
C	0.2	3.4	0.1
B	0.2	1	0.1

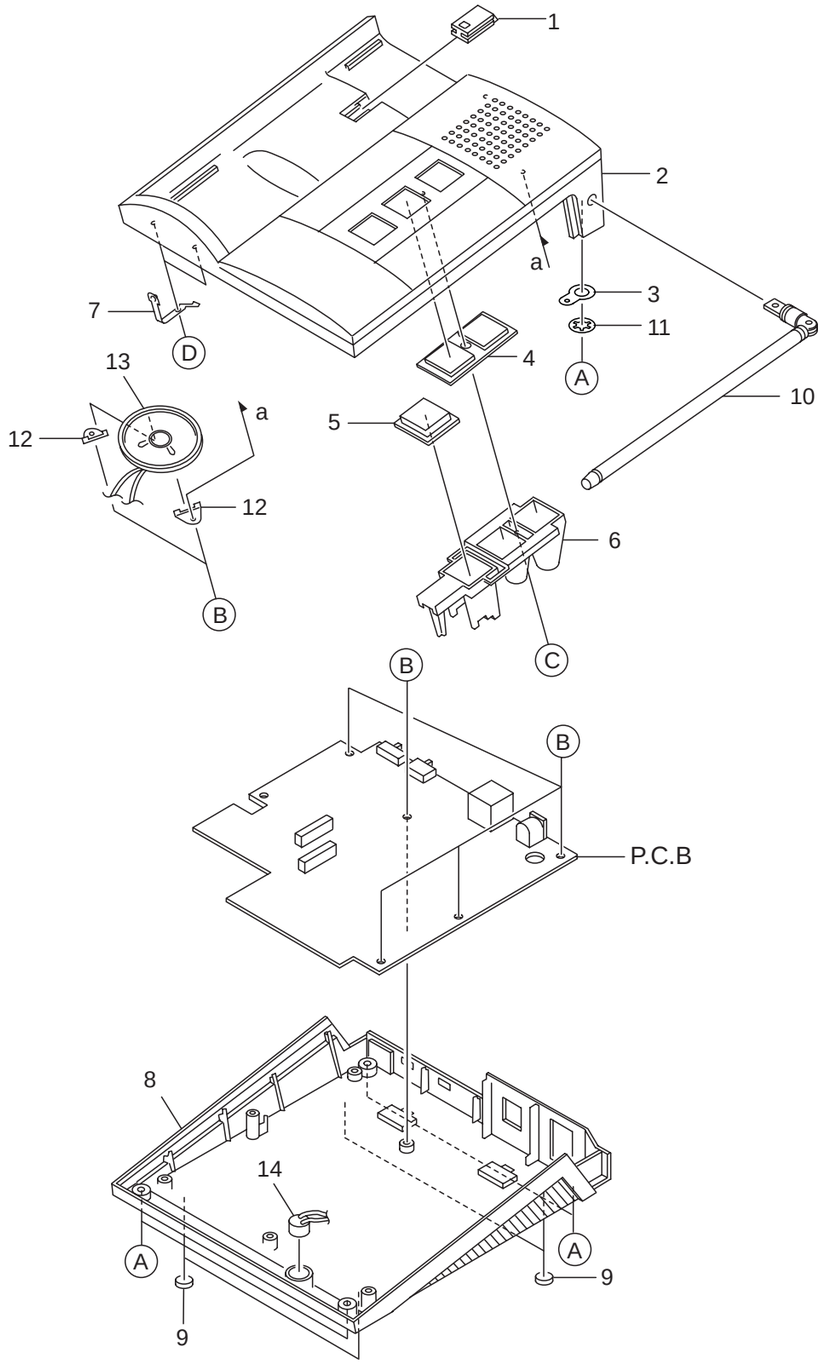
Q9

	WAITING (V)	TALIKING (V)	CHARGING (V)
E	0	0	0
C	0.2	3.5	0.1
B	0.2	0.7	0.1

Q1

	WAITING (V)	TALIKING (V)	CHARGING (V)
E	3.8	1.5	4
C	0	0	0
B	3.8	3.8	4.1

MECHANICAL EXPLODED VIEW 1/2



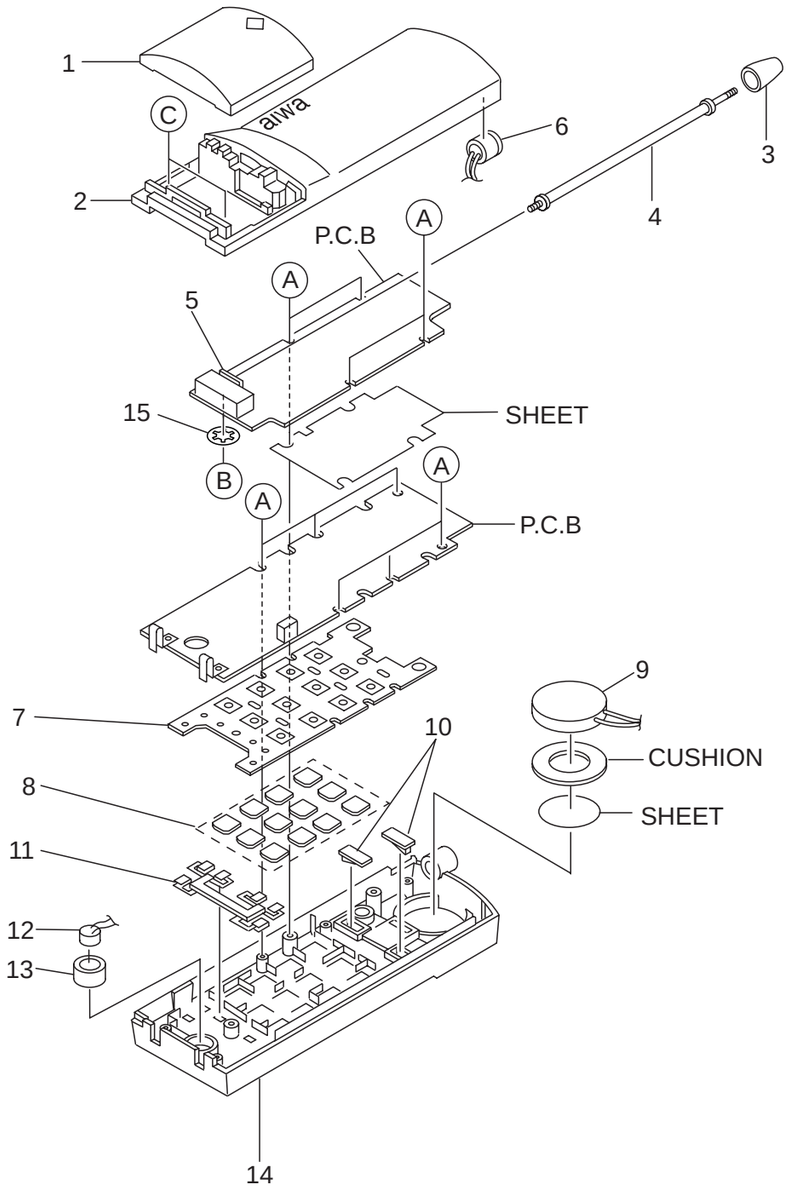
MECHANICAL PARTS LIST 1/2

DESCRIPTIONで判断できない物は "REFERENCE NAME LIST" を参照してください。
If can't understand for Description please kindly refer to "REFERENCE NAME LIST".

REF. NO	PART NO.	KANRI NO.	DESCRIPTION
1	88-PCD-006-010		HANGER,H/S BLK B/U<AEZ1B>
1	88-PCD-124-010		HANGER,H/S BLUE B/U<AEZ1L>
1	88-PCD-154-010		HANGER,H/S GRN B/U<AEZ1G>
2	8Z-PC6-001-010		CABI,TOP BLK B/U<AEZ1B>
2	8Z-PC6-031-010		CABI,TOP BLUE B/U<AEZ1L>
2	8Z-PC6-041-010		CABI,TOP GRN B/U<AEZ1G>
3	88-PCD-205-010		TERMINAL,ANT B/U
4	8Z-PC6-004-010		LENS,LED BLK
5	8Z-PC6-003-010		BTN,INT BLK B/U
6	8Z-PC6-201-010		HLDR,BTN B/U
7	8Z-PC6-203-010		TERMINAL,CHG B/U
8	8Z-PC6-002-010		CABI,BOTTOM BLK B/U
8	8Z-PC6-032-010		CABI,BOTTOM BLUE B/U<AEZ1L>
8	8Z-PC6-042-010		CABI,BOTTOM GRN B/U<AEZ1G>
9	88-PCD-202-010		FOOT,RUBBER
10	88-PCD-658-010		ANT,ROD B/U-YH871103
11	SB-032-065-450		INTERNAL LOCK WASHER 3.2-6.5-0
12	8Z-PC6-202-010		HLDR,SPKR B/U
13	8Z-PC6-616-010		SPKR,AES01 80HM
14	88-PCD-617-010		MIC,ECM CMT58H
A	87-751-096-410		VT2+3-10 GLD
B	87-751-073-410		TAPPING SCREW, VT2+2.6-6
C	87-751-034-410		SCREW VT2+2-5
D	87-751-033-410		VT2+2-4 W/O SLOT

COLOR NAME TABLE

Basic color symbol	Color	Basic color symbol	Color	Basic color symbol	Color
B	Black	C	Cream	D	Orange
G	Green	H	Gray	L	Blue
LT	Transparent Blue	N	Gold	P	Pink
R	Red	S	Silver	ST	Titan Silver
T	Brown	V	Violet	W	White
WT	Transparent White	Y	Yellow	YT	Transparent Yellow
LM	Metallic Blue	LL	Light Blue	GT	Transparent Green
LD	Dark Blue	DT	Transparent Orange		



MECHANICAL PARTS LIST 2/2

DESCRIPTIONで判断できない物は "REFERENCE NAME LIST" を参照してください。
If can't understand for Description please kindly refer to "REFERENCE NAME LIST".

REF. NO	PART NO.	KANRI NO.	DESCRIPTION
1	S8-PCD-120-010		DOOR,BATT<AEZ1B>
1	S8-PCD-120-040		DOOR,BATT<AEZ1L>
1	S8-PCD-120-050		DOOR,BATT<AEZ1G>
2	S8-PCD-110-600		H/S BACK<AEZ1B>
2	S8-PCD-111-000		H/S BACK<AEZ1G>
2	S8-PCD-110-900		H/S BACK(H/S-BL)<AEZ1L>
3	S8-PCD-170-010		KNOB,CAP ANT
4	S0-111-070-000		TELESCOPIC ROD ANTENNA
5	S8-PCD-440-000		ANT,HOLDER H/S
6	S3-120-000-010		BUZZER,LF12G-1WC 12MM
7	S8-PCD-210-000		RUBBER KEYPAD 107.5-44
8	S8-PCD-130-100		KEY,DIAL NO(H/S)
9	S0-301-500-030		DYNAMIC RECEIVER 38-21
10	S8-PCD-140-020		BTN,TALK<AEZ1L>
10	S8-PCD-140-010		BTN,TALK<AEZ1B>
10	S8-PCD-140-030		BTN,TALK<5EZG>
11	S8-PCD-160-020		KEY,FUNCTION<AEZ1L>
11	S8-PCD-160-030		KEY,FUNCTION<AEZ1G>
11	S8-PCD-160-010		KEY,FUNCTION<AEZ1B>
12	S1-291-000-640		MIC CONDENSER CMT64
13	S0-251-100-000		MIC HOLDER (BLK)
14	S8-PCD-100-500		HANDSET FRONT<AEZ1B>
14	S8-PCD-101-000		H/S FRONT<AEZ1G>
14	S8-PCD-100-900		H/S FRONT(H/S-BL)<AEZ1L>
15	SB-022-048-300		INTERNAL LOCK WASHER 2.2-4.8-0
A	S0-502-000-520		SCREW,ST2-5
B	87-263-033-210		SCREW,2x4
C	87-743-036-410		SCREW,ST2-8

COLOR NAME TABLE

Basic color symbol	Color	Basic color symbol	Color	Basic color symbol	Color
B	Black	C	Cream	D	Orange
G	Green	H	Gray	L	Blue
LT	Transparent Blue	N	Gold	P	Pink
R	Red	S	Silver	ST	Titan Silver
T	Brown	V	Violet	W	White
WT	Transparent White	Y	Yellow	YT	Transparent Yellow
LM	Metallic Blue	LL	Light Blue	GT	Transparent Green
LD	Dark Blue	DT	Transparent Orange		

ACCESSORIES/PACKAGE LIST

DESCRIPTIONで判断できない物は "REFERENCE NAME LIST" を参照してください。
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REF. NO	PART NO.	KANRI NO.	DESCRIPTION
1	8Z-PC6-901-010		IB,AEZ (E) -C315
2	8Z-PC6-902-010		IB,AEZ (S) -C315
3	88-PCD-627-010		CORD, ST9-2WA
4	87-B30-204-010		BAT,NB-302NC
5	87-301-162-410		SW+3.8-32
⚠ 6	87-B30-278-010		AC ADAPTOR,AC-A907EZ1NC

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